

CLAIMS

1. A method of driving a solid-state imaging device comprising:

5 a photosensitive region having photosensitive cells arranged two-dimensionally in row and column directions on a semiconductor substrate, each photosensitive cell including a photodiode for accumulating a signal charge obtained by converting incoming light into electricity; a transfer transistor for
10 transferring the signal charge accumulated in the photodiode; a floating diffusion layer portion for temporarily accumulating the transferred signal charge; an amplifying transistor for amplifying the signal charge accumulated in the floating diffusion layer portion; and a reset transistor for resetting the signal charge
15 accumulated in the floating diffusion layer portion;

a power supply line commonly connected to drains of the amplifying transistors;

a vertical driver circuit for individually driving transfer transistors arranged in a same row and reset transistors arranged
20 in the same row;

a plurality of vertical signal lines each having commonly connected thereto corresponding amplifying transistors arranged in a same column;

a plurality of load transistors connected to the vertical
25 signal lines, respectively;

a noise suppression circuit for suppressing noise of signals outputted to the vertical signal lines;

a plurality of horizontal transistors which are arranged in the row direction, and to which outputs from the noise suppression circuit are inputted; and

a horizontal driver circuit for allowing the horizontal transistors to sequentially and selectively operate, and thereby sequentially outputting the outputs from the noise suppression circuit, the method comprising the steps of:

pulse-driving the power supply line on a per horizontal period basis;

sequentially selecting different rows on a per horizontal period basis using the horizontal driver circuit, and allowing corresponding reset transistors and corresponding transfer transistors included in corresponding photosensitive cells arranged in a selected row to successively operate while the power supply line is driven, and thereafter allowing the corresponding reset transistors to operate while the power supply line is not driven; and

sequentially outputting outputs from the noise suppression circuit on a per horizontal period basis using the horizontal driver circuit, wherein

a low-level potential of the power supply line has a predetermined potential higher than zero potential.

2. The method of driving the solid-state imaging device according to claim 1, wherein the predetermined potential is higher than channel potentials obtained when a low level is applied to the reset transistors.

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3. The method of driving the solid-state imaging device according to claim 1, wherein the predetermined potential is higher than channel potentials obtained when a low level is applied to the transfer transistors.

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4. The method of driving the solid-state imaging device according to claim 1, wherein the predetermined potential is higher than channel potentials of the photodiodes.

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5. The method of driving the solid-state imaging device according to claim 1, wherein the photosensitive region is formed on a p-type substrate.

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6. The method of driving the solid-state imaging device according to claim 1, wherein the photosensitive region is formed in a p-type well on an n-type substrate.